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DATE MAILED: 07/03/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/401,636	Applicant(s) Hellman, L.
	Examiner Gerald Ewoldt	Group Art Unit 1644

☒ Responsive to communication(s) filed on *May 15, 2000*.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-24* is/are pending in the application.

Of the above, claim(s) *12-24* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-11* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *8 9 8 1/2*

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- *SEE OFFICE ACTION ON THE FOLLOWING PAGES* ---

DETAILED ACTION

1. Restriction to one of the following inventions is required under 35 U.S.C. § 121:

I. Claims 1-11, drawn to an immunogenic polypeptide, classified in Class 530, subclass 387.3.

II. Claims 12-19, 22, and 24 drawn to a vaccine complex comprising two polypeptides, classified in Class 424, subclasses 185.1 and 192.1.

III. Claims 12-21 drawn to a vaccine complex comprising a cytokine and two polypeptides, classified in Class 424, subclasses 185.1 and 192.1.

IV. Claim 23 drawn to a vaccine complex comprising two different cytokines and a polypeptides, classified in Class 424, subclasses 185.1 and 192.1.

The inventions are distinct, each from the other because:

2. Inventions I-IV are different products. The products of Inventions I-IV are different because they have different structures, functions, and immunological effects. Therefore they are patentably distinct.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their divergent fields of search, restriction for examination purposes as indicated is proper.

4. Should Applicant elect any of Groups II, III, or IV, Applicant is further required under 35 U.S.C. § 121 to:

1) Elect:

A) A **specific** vaccine complex comprising a **specific** polypeptide complex and a **specific** linker (if Group II is elected).

B) A **specific** vaccine complex comprising a **specific** polypeptide complex, a **specific** linker, and a **specific** cytokine (if Group III is elected).

C) A **specific** vaccine complex comprising a **specific** polypeptide complex comprising two **specific** cytokines, a **specific** linker, and a **specific** polypeptide (if Group IV is elected).

2) List all Claims readable thereon including those subsequently added. Currently Claims 12, and 22-24 are generic.

Different vaccine complexes have different polypeptide structures and confer different immunological properties to the complexes. Different linkers allow different conformations thus also conferring different immunological properties to the complexes. Different cytokines have different immunological functions and will enhance different types of immune responses. Therefore, the species of Groups II-IV are independent and patentable over one another.

5. During a telephone conversation with Dr. J. Patrick Finn III on 6/12/00 a provisional election was made to prosecute the invention of Group I, claims 1-11. Affirmation of this election must be made by applicant in replying to this Office Action. Claims 12-24 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to non-elected inventions.

6. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1-11 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for "An immunogenic polypeptide comprising a nonself IgE CH2 domain, a self IgE CH3 domain, and a nonself IgE CH4 domain" does not reasonably provide enablement for:

A) "An immunogenic polypeptide comprising a self IgE portion and a nonself IgE portion," (claim 1).

B) "The immunogenic polypeptide of claim 1 wherein the nonself portion comprises a first region and a second region , said self IgE portion being located between said first and second regions of said nonself IgE portion," (claim 5).

C) "The immunogenic polypeptide of claim 5, wherein said first region comprises at least a portion of an IgE CH2 domain (claim 6).

D) "The immunogenic polypeptide of claim 5, wherein said first region comprises at least a portion of an IgE CH4 domain (claim 7).

The specification disclosure is insufficient to enable one skilled in the art to practice the invention as broadly claimed in claims 1, 5, 6, and 7 without an undue amount of experimentation. The scope of the claims is not commensurate with the enablement provided by the disclosure with regard to the efficacy of an immunogenic polypeptide that lacks the minimal IgE-receptor binding domain, for the treatment IgE related diseases. As the specification discloses, previous studies teach that minimally, a 76 amino acid region between the CH2 and CH3 domains must be blocked to inhibit the interaction of IgE with its high-affinity receptor (page 2, paragraph 2). Thus, an immunogenic peptide for the generation of antibodies to block the binding of IgE with its high-affinity receptor must minimally include said 76 amino acid region, absent evidence to the contrary. The claimed terms "portion", "at least a portion", and "region" are open-ended and include numerous fragments of various sizes of the recited CH domains. The specification discloses functional activity for a complete polypeptide comprising a nonself IgE CH2 domain, a self IgE CH3 domain, and a nonself IgE CH4 domain only. The specification fails to disclose *any* fragments, portions, or regions that are effective for the generation of antibodies for the treatment IgE related diseases. The problem of predicting which fragments of a protein will retain functionality and which will not is

complex and well outside the realm of routine experimentation. In re Fisher, 166 USPQ 18 indicates that the more unpredictable an area is, the more specific enablement is necessary in order to satisfy the statute.

In view of the quantity of experimentation necessary, the lack of working examples, the unpredictability of the art, the lack of sufficient guidance in the specification, and the breadth of the claims, it would take undue trials and errors to practice the claimed invention.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-11, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically: in claims 1, 3, 5, 8, and 10, the term " portion" renders the claims indefinite because the limitation is unclear and ambiguous.

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-4 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,254,671.

The '671 patent teaches an immunogenic polypeptide comprising self and non-self portions of human IgE, including a human CH3 domain. Said polypeptide is capable of dimerizing and inducing a polyclonal anti-self IgE response (see particularly column 7 paragraph 4 and column 10 paragraph 4).

The reference clearly anticipates the claimed invention.

12. Claims 1-7, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 0327378 (1989, IDS).

EP 0327378 teaches an immunogenic polypeptide comprising self and non-self domains (portions) of immunoglobulins. The reference further teaches IgE domains, human IgE domains, a self CH3 domain, a polypeptide comprising a nonself - self - nonself construct, and nonself - self - nonself constructs which include nonself CH2 and CH4 domains. (see particularly page 3, fifth paragraph and page 4 last paragraph - page 5 third paragraph). Claim 4 is included in the rejection because it is an inherent property that the referenced IgE polypeptide is capable of dimerizing.

The reference clearly anticipates the claimed invention.

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claims 1 and 8-9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,254,671 or EP 0327378.

The '671 patent and EP 0327378 have been discussed supra. The references differ from the claimed invention only in that it does not teach the use of non-placental mammal, specifically, opossum, platypus, koala, kangaroo, wallaby or wombat nonself IgE. However, nonplacental mammals are the most distantly related mammals to placental mammals (such as humans) and would thus be the most obvious choice as a source of the most distantly related nonself IgE.

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to make an immunogenic nonself/self IgE peptide, as taught by the '671 patent or EP 0327378, using non-placental mammal, specifically, opossum, platypus, koala, kangaroo, wallaby or wombat nonself IgE. One of ordinary skill in the art would have been motivated to use said nonself IgE because nonplacental mammals are the most distantly related mammals to placental mammals (such as humans) and would thus be the most obvious choice as a source of the most distantly related nonself IgE.

15. No claim is allowed.

16. The Hogan et al. and Kraemer et al. references have been lined through on the Form 1449 and have not been considered because they have been submitted as Tables of Contents only.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Gerald Ewoldt whose telephone number is (703) 308-3997. The examiner can normally be reached Monday through Thursday and alternate Fridays from 7:30 am to 5:30 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached on (703) 308-3973. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center 1600 receptionist whose telephone number is (703) 308-0196.

Papers related to this application may be submitted to Technology Center 1600 by facsimile transmission. Papers should be faxed to Technology Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Fax Center telephone number is (703) 305-3014.

G.R. Ewoldt, Ph.D.
Patent Examiner
Technology Center 1600
June 22, 2000

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